

# **EROSION CONTROL MEASURES**

**(Parts IX & X)**

# **EROSION CONTROL MEASURES**

**(Part IX)**

**\* General Requirements**



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**see IC#34 for additional information**

## **STANDARD EROSION CONTROL PLAN STANDARDS**

The following erosion control standards apply only to the City of Troutdale's Standard Erosion Control Plan, and shall be used in conjunction with the Standard Erosion Control Plan and the City of Gresham Erosion Control Plans Technical Guidance Handbook. Applicable standard details for the Standard Plan can be found in the Gresham erosion control handbook. The Standard Erosion Control Plan may be used only under the following circumstances:

1. The lot is 20,000 square feet or less.
2. No portion of the lot exceeds 5% slope.

The Standard Erosion Control Plan consists of a Base Measure, and Post Construction Measure which are listed below with reference to the applicable section number in the Erosion Control Plans Technical Guidance Handbook (City of Gresham, April, 1991 edition). The referenced sections shall be referred to for additional criteria, specifications, and details.

### **BASE MEASURE**

Install a sediment fence/barrier at the toe of the disturbed area or material stock pile. The sediment fence/barrier shall consist of the appropriate filter fabric and fabric support system, or shall be constructed of straw bales, and shall be installed in accordance with the Erosion Control Handbook. Install a gravel construction entrance (Page II - 26). The gravel construction entrance shall be clean pit run or a minimum of 3/4-inch minus gravel, shall be a minimum of 8 inches thick and 50 feet long, shall be installed over a subgrade reinforcement geotextile, and shall be the full width of the vehicle ingress and egress. Additional gravel may have to be added periodically to maintain proper functioning of pad. If gravel pad does not adequately prevent soil transport off construction site, additional measures shall be taken. (A 20' minimum pad length may be acceptable as approved for single family and duplex residential construction sites.)

### **POST CONSTRUCTION MEASURE**

Re-establish groundcover or landscape prior to removing erosion control measures (Pages IX - 4 and IX - 5).

### **SAMPLE SINGLE LOT EROSION CONTROL PLAN**

For more information on a typical single lot erosion control plan refer to Detail Drawing X-8.

## STANDARD EROSION CONTROL PLAN STANDARDS

The following erosion control standards apply only to the City of Troutdale's Standard Erosion Control Plan, and shall be used in conjunction with the Standard Erosion Control Plan and the City of Gresham Erosion Control Plans Technical Guidance Handbook. Applicable standard details for the Standard Plan can be found in the Gresham erosion control handbook. The Standard Erosion Control Plan may be used only under the following circumstances:

1. The lot is 20,000 square feet or less.
2. No portion of the lot exceeds 5% slope.

The Standard Erosion Control Plan consists of a Base Measure, and Post Construction Measure which are listed below with reference to the applicable section number in the Erosion Control Plans Technical Guidance Handbook (City of Gresham, April, 1991 edition). The referenced sections shall be referred to for additional criteria, specifications, and details.

### BASE MEASURE

Install a sediment fence/barrier at the toe of the disturbed area or material stock pile. The sediment fence/barrier shall consist of the appropriate filter fabric and fabric support system, or shall be constructed of straw bales, and shall be installed in accordance with the Erosion Control Handbook. Install a gravel construction entrance (Page II - 26). The gravel construction entrance shall be clean pit run or 2-inch minus gravel, shall be a minimum of 8 inches thick and 50 feet long, shall be installed over a subgrade reinforcement geotextile, and shall be the full width of the vehicle ingress and egress. Additional gravel may have to be added periodically to maintain proper functioning of pad. If gravel pad does not adequately prevent soil transport off construction site, additional measures shall be taken. (A 20' minimum pad length may be acceptable as approved for single family and duplex residential construction sites.)

### POST CONSTRUCTION MEASURE

Re-establish groundcover or landscape prior to removing erosion control measures (Pages IX - 4 and IX - 5).

### SAMPLE SINGLE LOT EROSION CONTROL PLAN

For more information on a typical single lot erosion control plan refer to Detail Drawing X-8.

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## EROSION CONTROL MEASURES

At a minimum, the following narrative is required on an Erosion Control Plan.

1. Approval of this erosion/sedimentation control (ESC) plan does not constitute an approval of permanent road or drainage design (e.g., size and location of roads, pipes, restrictors, channels, retention facilities, utilities, etc.)
2. The implementation of these ESC plans and the construction, maintenance, replacement, and upgrading of these ESC facilities is the responsibility of the applicant/contractor until all construction is completed and approved and vegetation/landscaping is established.
3. The boundaries of the clearing limits shown on this plan shall be clearly flagged in the field prior to construction. During the construction period, no disturbance beyond the flagged clearing limits shall be permitted. The flagging shall be maintained by the applicant/contractor for the duration of construction.
4. The ESC facilities shown on the construction plans must be constructed in conjunction with all clearing and grading activities, and in such a manner as to insure that sediment and sediment laden water do not enter the drainage system, roadways, or violate applicable water standards.
5. The ESC facilities shown on this plan are the minimum requirements for anticipated site conditions. During the construction period, these ESC facilities shall be upgraded as needed for unexpected storm events and to ensure that sediment and sediment-laden water do not leave the site.
6. The ESC facilities shall be inspected daily by the applicant/contractor and maintained as necessary to ensure their continued functioning.
7. The ESC facilities on inactive sites shall be inspected and maintained a minimum of once a month or within the 24 hours following a storm event.
8. At no time shall more than one foot of sediment be allowed to accumulate within a trapped catch basin. All catch basins and conveyance lines shall be cleaned prior to paving. The cleaning operation shall not flush sediment laden water into the downstream system.
9. Stabilized construction entrances shall be installed at the beginning of construction and maintained for the duration of the project. Additional measures may be required to insure that all paved areas are kept clean for the duration of the project.



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10. Before removal of erosion control measures, vegetation must be re-established.

## TEMPORARY GRASSES AND PERMANENT VEGETATIVE COVER

### Purpose

To reduce erosion and sedimentation by stabilizing exposed soils with vegetation and mulching.

### Conditions Where Practice Applies

1. Ground surfaces exposed during the wet season (November 1 through April 30).
2. Areas which will not be subjected to heavy wear by on-going construction traffic.
3. Exposed ground surfaces at end of construction period (permanent cover must be established prior to removal of any erosion control measures).
4. Temporary or permanent stabilization of new or disturbed ditches or swales.

### Design Criteria/Specifications: Temporary Erosion Control Grasses

1. Temporary grass cover measures must be fully established by November 1 or other cover measures will have to be implemented until adequate grass coverage is achieved. To establish an adequate grass stand for controlling erosion by November 1, seeding measures must occur by September 1.
2. Hydromulch shall be applied with grass seed at a rate of 2000 lb./acre. (Seed must be applied at 200 lb./acre. Refer to Paragraph 6 on Page IX-4.) On slopes steeper than 10 percent, hydroseed and mulch shall be applied with a bonding agent (tackifier). Application rate and methodology to be in accordance with seed supplier recommendations.
3. If straw is used in conjunction with hydromulch, it must be dry, loose, weed-free, and applied at a rate of 4000 lb./acre. Anchor straw by working in by hand or with equipment (rollers, cleat tracks, etc.).
4. Straw mulch shall be spread uniformly immediately following seeding.
5. Soil Preparation - Top soil should be prepared according to landscape plans, if available, or recommendations of grass seed supplier. It is recommended that slopes be roughened before seeding by "track-walking," (driving a crawling tractor up and down slopes to

leave a pattern of cleat imprints parallel to slope contours) or other method to provide more stable sites for seeds to rest.

6. **Seeding - Required seed mixes are as follows. Similar mixes may be substituted if approved by the City and still total 200 lb/acre.**
  - a. **Dwarf Grass Mix (low height, low maintenance): Dwarf Perennial Ryegrass, 80% by weight; Creeping Red Fescue, 20% by weight; application rate: 100 pounds minimum per acre.**
  - b. **Standard Height Grass Mix: Annual Ryegrass, 40% by weight; Turf-type Fescue, 60% by weight; Application rate: 100 pounds minimum per acre.**
7. **Fertilization for grass seed - In accordance with supplier's recommendations. Development areas within 50 feet of water bodies and wetlands must use a non-phosphorus fertilizer.**
8. **Watering - Seeding shall be supplied with adequate moisture to establish grass. Supply water as needed, especially in abnormally hot or dry weather or on adverse sites. Water application rates should be controlled to provide adequate moisture without causing runoff.**
9. **Re-seeding - Areas which fail to establish grass cover adequate to prevent erosion shall be re-seeded as soon as such areas are identified, and all appropriate measures taken to establish adequate cover.**

## STRAW MULCH

### Purpose

To reduce erosion by providing a protective cover over disturbed bare or reseeded soils. Also can be used to enhance success of seeding/revegetation.

### Conditions Where Practice Applies

1. As a cover on ground surfaces and stockpiles exposed during the wet season (November 1 through April 30).
2. As a mulch to enhance vegetation establishment in areas that have been seeded.

### Design Criteria/Specifications

1. Loose, weed-free straw mulch shall be applied at a rate of no less than 4000 pounds (2 tons) per acre, and shall have a minimum depth in-place of 2 inches. It shall be spread uniformly throughout the entire area and integrated into the top layer of soil.
2. Mulch must be stabilized in place by hand or machine punching the straw into the soil.

## PLASTIC SHEET COVERING

### Purpose

To provide immediate erosion protection to slopes and disturbed areas when vegetative cover cannot be achieved due to soils, slopes or time of year. To provide erosion protection on soils, spoils, and other erodible stockpiles.

### Conditions Where Practice Applies

1. Disturbed areas which require immediate erosion protection.
2. On areas of steep slope (greater than 50 percent) and areas of moderate slope that are prone to erosion.
3. On ground surfaces and stockpiles exposed during wet weather season (November 1 through April 30).
4. As a temporary measure to provide erosion protection and assist in germination on areas seeded between November 1 and March 31.

### Design Criteria/Specifications

1. Plastic sheeting shall be polyethylene and have a minimum thickness of 6 mil.
2. Covering shall be installed and maintained tightly in place by using sandbags or tires on ropes with a maximum 10 foot grid spacing in all directions. All seams shall be taped or weighted down full length and there shall be at least a 12-inch overlap of all seams. For seams parallel to the slope contour, the uphill sheet shall overlap the downhill sheet. No runoff shall be allowed to run under the plastic covering.
3. Drainage from areas covered by plastic sheeting shall be controlled such that no discharge occurs directly onto uncontrolled, disturbed areas of the construction site.
4. Clear plastic sheeting may be installed on areas seeded between November 1 to March 31 to provide a greenhouse-type environment, and remain until vegetation is firmly established.



## SEDIMENT TRAPS AND PONDS

### Purpose

To collect and store sediment eroded from exposed ground surfaces disturbed during the construction period, prior to establishment of permanent vegetation and drainage facilities.

### Conditions Where Practice Applies

1. Downhill of areas with exposed soils during the wet season (November 1 through April 30).
2. Sediment Traps: where the tributary drainage area is 3 acres or less and slopes are less than 50 percent.
3. Sediment Ponds: where the tributary drainage area is 10 acres or less and slopes are less than 50 percent.

### Design Criteria/Specifications

Temporary interceptor dikes or swales may be constructed to divert runoff to sediment traps or ponds.

### Sediment Traps

The sediment trap may be formed completely by excavation or by construction of a compacted embankment. It shall have a sediment storage depth not to exceed 1.5 feet, topped by a 2 foot deep settlement zone. Sediment trap side slopes shall be 3:1 or flatter. The outlet of the trap should be a weir/spillway, providing a minimum 1 foot overflow depth between the spillway and embankment.

A filter fabric fence or similar filter must be constructed to filter runoff from the trap prior to discharge from the construction site.

1. See Detail Drawing X-10 for details.
2. Calculate the required sediment storage volume using the Soil Conservation Service (SCS) Universal Soil Loss Equation and assuming a minimum one year sediment accumulation period for design purposes. To convert tons of sediment as calculated to cubic feet, multiply by 12.1 cu. ft. per ton. For information on the Universal Soil Loss Equation, contact the Soil Conservation Service.
3. Determine the bottom surface area of the sediment trap using the calculated sediment volume and the maximum 1.5 foot depth and 3:1 side slope requirements.



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4. Determine the total trap dimensions by adding an additional 2 feet of depth for settling volume (before overtopping of spillway) above the sediment storage volume, while not exceeding 3:1 side slopes.
  5. A 3:1 ratio of trap length to width is desirable. Length is defined as the average distance from the inlet to the outlet of the trap.

#### Sediment Ponds

A sediment pond may be formed by partial excavation and/or by construction of a compacted embankment. It may have one or more inflow points carrying polluted runoff. Baffles to spread the flow throughout the pond should be included. A securely anchored riser pipe is the recommended principal discharge mechanism with an emergency overflow spillway. The rise pipe should be perforated and covered with filter fabric and gravel "cone" for filtration, or solid with a 1 inch diameter dewatering hole and perforated drain pipe. Outlet protection shall be provided to reduce erosion at the pipe outlet. A filter fabric fence or similar filter must be constructed to filter runoff from the pond prior to discharge from the construction site.

1. The sediment pond shall have a sediment storage depth no greater than three feet, topped by a two foot (minimum) to four foot (maximum) deep settlement zone and an additional one foot minimum of freeboard. The pond side slopes shall be 3:1 or flatter.
2. See Detail Drawing X - 11.
3. The sediment storage volume is determined in the same manner as mentioned on the previous page.
4. The pond riser pipe and outlet pipe shall be sized to carry the ten year design storm (or as otherwise required by the City).
5. A 3:1 ratio between the pond length and width is desirable. Length is defined as the average distance from the inlet to the outlet of the trap. Use baffles in the pond to help prevent short-circuiting and to increase the effective pond length where site conditions prohibit constructing a pond with a direct 3:1 length to width ratio.

## TEMPORARY INTERCEPTOR DIKES AND SWALES

### Purpose

To intercept storm runoff from drainage areas above unprotected slopes and direct to a stabilized outlet. To intercept storm runoff from a disturbed site and direct it to a sediment trap or pond.

### Conditions Where Practice Applies

1. Where the volume and velocity of runoff from disturbed slopes must be reduced. When an interceptor dike or swale is placed above a disturbed slope, it reduces the volume of water reaching the disturbed area by intercepting runoff from above.
2. Where sediment traps or ponds are to be used. Interceptor dikes and swales can be used to direct site runoff to a sediment trap or pond.

### Design Criteria/Specifications

1. Intercepted runoff must be directed to a stabilized area such that no erosion occurs due to the additional water and velocity, or to a sediment pond or trap.
2. See Detail Drawing X - 7 for details. Straw Bales may also be used to intercept runoff. See Section X - 2, for installation criteria and specifications.
3. It is recommended that interceptor dikes and swales be stabilized with approved cover before put into use. Such cover may include grass, rock or erosion blankets. If cover is not used, then some type of outlet control must be used such as biofilter bags, straw bales, etc.
4. Spacing between interceptor dikes and swales along slope contours is as follows:

Slope	Spacing
< 5%	300 feet
5-10%	200 feet
10-40%	100 feet

5. Minimize construction traffic over dikes and swales.
6. The upslope side of interceptor dikes shall provide positive drainage to the dike outlet. Provide energy dissipation measures as necessary to minimize erosion at dike outlet.
7. Grades for drainage parallel to interceptor dikes shall be between 0.5 and 1.0 percent.

8. Maximum grade of interceptor swales shall be 5 percent, and provide positive drainage to outlet.
9. Outlets shall lead to a low point on site or to a sediment trap/pond where sediment can settle out and runoff is then discharged.
10. Temporary dikes and swales shall be graded out at the completion of construction, when permanent vegetation has been established.

## **EROSION CONTROL BLANKETS**

### **Purpose**

To provide immediate protection and physical stabilization of disturbed soils. Typically used when vegetative cover cannot be achieved due to soils, slopes or time of year. Can be used to enhance success of seeding, planting and/or sodding.

### **Conditions Where Practice Applies**

1. On areas of steep slopes 20 percent and greater and areas of moderate slopes that are prone to erosion.
2. As a cover on ground surfaces exposed during the wet season (November 1 through April 30).
3. As supplemental aid to seed and/or mulch treatment on slopes or in ditches or swales.

### **Design Criteria/Specifications**

1. Erosion control blankets may be used on a range of grades from level areas up to near vertical slopes. Erosion control blankets must contain an organic mulch such as straw or wood fiber. The blanket must be applied so that it is in complete contact with the soil. If it is not, erosion will occur beneath it. Erosion control blankets shall be securely anchored to the slope in accordance with manufacturer's recommendations. See Detail Drawing X-12 for details.

## TEMPORARY SEDIMENT FENCES

### Purpose

To reduce the transport of sediment from a construction site by providing a temporary physical barrier to sediment and reducing runoff velocities.

### Conditions Where Practice Applies

1. Down slope of disturbed areas where runoff occurs as sheet runoff.
2. At the toe of soil stock piles.
3. At intervals as required by the City.
4. At grade breaks exceeding 20 percent.
5. Following discharge from a sediment trap or pond
6. Sediment fences shall not be installed across streams.

### Design Criteria/Specifications

1. See Detail Drawing X - 1 for details.
2. Selection of filter fabric tensile and bursting strength depends on the slope characteristics. The use of standard or heavy duty filter fabric shall meet design standards. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of 6 months of expected usable construction life at a temperature range of 0 degrees to 120 degrees. Selection shall be based on standard engineering principles for design.
3. Standard or heavy duty filter fabric fence shall have manufactured stitched loops for 2"x 2" post installation. Stitched loops shall be installed on the up-hill side of the sloped area, with posts spaced a maximum of 6 feet apart and driven securely into the ground a minimum of 24 inches..
4. Filter fabric fence shall have a minimum vertical burial of 6 inches. All excavated material from filter fabric fence installation shall be firmly redeposited along the entire trenched area on the uphill side of the fence. The filter fabric fence shall be installed to follow the contours where feasible.



5. The physical integrity of all materials shall be sufficient to meet the requirements of their intended use and withstand normal wear and tear.
6. Where practical the filter fabric shall be purchased in a continuous roll to the length of the barrier to avoid use of joints. When joints are necessary, 2"x 2" posts shall be interlocked with each other and be attached securely.
7. Sediment fences shall be inspected by applicant/contractor immediately after each rainfall and at least daily during prolonged rainfall. Any required repairs, relocations or additions shall be made immediately.
8. At no time shall more than one foot depth of sediment be allowed to accumulate behind a sediment fence. Sediment should be removed or regraded into slopes, and the sediment fences repaired and reestablished as needed.
9. Filter fabric fences shall be removed by the general contractor when they have served their usefull purpose, but not before the upslope area has been permanently protected and stabilized.

## STRAW BALE SEDIMENT BARRIER/BIO-FILTER BAGS

### Purpose

To reduce the transport of sediment from a construction site by providing a temporary physical barrier to sediment and reducing runoff velocities. Also may be used to divert runoff around active work areas or into sediment filtration/sedimentation areas. Straw bales shall not be considered a means of filtering sediment.

### Conditions Where Practice Applies

1. Downslope of disturbed areas where runoff occurs as sheet runoff.
2. At the toe of the soil stock piles.
3. Bio-Filter bags can be used in all newly constructed or existing drainage ditches and/or swales.
4. Note: see Detail Drawing X - 3 "Bio-Filter Bags In Ditches and Swales" for use of Bio-Filter as flow interceptor dikes.
5. See Detail Drawing X - 6 for Bio-Filter Bag catch basin protection. Straw bales shall not be used for catch basin protection.
6. Straw bales and bio-filter bags shall not be installed across streams.

Superseded  
by IC#11

### Design Criteria/Specifications

1. See Detail Drawing X - 2 for details of straw bale barriers, and Bio-Filter Bags in Detail Drawings X - 3 through X - 6.
2. Straw bales shall be standard 40 to 60 pound rectangular bales of cereal grain or seed straw.
3. Bio-filter bags shall be clean 100 percent recycled wood product waste. Size of bag shall be 18x8x30 inches and weigh approximately 45 pounds, and made of 1/2 inch plastic mesh.
4. Stakes shall be wood of size as shown on Detail Drawing X - 2 and driven through bales and into ground to a minimum depth of 12 inches.
5. Stakes for Bio-Filter bags shall be installed as specified in the Notes on Detail Drawings X-3 through X-6.

6. Straw bales shall be keyed into existing ground 2 to 4 inches.
7. Straw bale sediment barriers and Bio-Filter bags may be left in place or used as mulch after completion of site work if approved by the City.
8. At no time shall more than one foot of sediment be allowed to accumulate behind straw bale sediment barriers and/or Bio-Filter bags. Sediment shall be removed or regraded into the slope and/or new lines of barriers installed uphill of sediment-laden barriers.



## CONTINUOUS GEOSYNTHETIC BERMS FILLED WITH SOIL, SAND OR ROCK

### Purpose

To reduce the transport of sediment from a construction site by providing a temporary physical barrier which either contains sediment while reducing runoff velocity or can act as a containment area for sediment and water.

### Conditions Where Practice Applies

1. Can be used as an alternative to a sediment fence or straw bale/bio-filter bag.
2. At the toe of soil stock piles.
3. Down slope of disturbed areas where runoff occurs as sheet runoff.
4. At intervals as required by the City.
5. At grade breaks exceeding 20 percent.
6. To assist in the construction of sediment traps/ponds, check dams, or other structures.
7. Continuous berms shall not be installed across streams.

### Design Criteria/Specifications

1. See Detail Drawing X-13 for details.
2. A continuous berm is made of geosynthetic fabric wrapped around either native soil, sand, or rock. The type of fill material varies depending on the berm's use. Before installation the fabric must be approved by the City.
3. If the continuous berm is used as an alternative to a sediment fence for example, then it must be filled with a material which allows water to pass through such as pea gravel or 3/4" - 1" rock. At no time shall more than one foot depth of sediment be allowed to accumulate behind the berm. Sediment should be removed or regraded into slopes and the berm repaired as necessary.
4. If the continuous berm is used as a sediment trap where water and sediment accumulate at a low point, the majority of the berm must be filled with native soil or sand. The low point area must contain material which allows water to pass through such as pea gravel or 3/4" - 1" rock. The low point area must be 3 feet long at a minimum with slits cut into the fabric to allow the discharge of water.

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5. When installing a continuous berm each end must be angled inward to prevent sediment and water from flowing around the berm.
  6. For whichever type of application the continuous berm is used, inspections must be on a routine basis and immediately after each rainfall. Any required repairs, relocations or additions shall be made immediately.
  7. Once the upslope area has been permanently protected and stabilized, removal of the berm is completed by slitting the berm, spilling the fill material and incorporating it into the existing soil, and properly disposing of the fabric.

## LIQUID EROSION CONTROL BLANKETS

### Purpose

To provide immediate protection and physical stabilization of disturbed soils. Typically used when vegetative cover cannot be achieved due to soils, slopes or time of year. Can be used in combination with seed and fertilizer to enhance revegetation efforts.

### Condition Where Practice Applies

1. As an alternative to erosion control blankets.
2. On areas of steep slope (20 percent and greater) and areas of moderate slope that are prone to erosion.
3. As a cover on ground surfaces exposed during the wet season (November 1 through April 30) where it is too late in the year to hydroseed.
4. As an enhancement to hydroseeding, particularly in areas of steep slope (20 percent and greater).

### Design Criteria/Specifications

1. Liquid erosion control blankets, such as a product called "Soil Guard" or an equivalent as approved by the City, may be used on a range of grades from level areas up to near vertical slopes.
2. The liquid erosion control blanket mixture must contain 200 lb. of seed/acre when applied. The mixture must be applied during dry weather. Following application, there needs to be 24 to 48 hours of dry weather to allow the mixture to solidify. The mixture, once solidified, must have a minimum thickness of 3/8".
3. Liquid erosion control blanket mixes must be applied by a certified applicator approved by the City.
4. Seeding specifications are as follows:

200 lb. of seed/acre is the required application rate. Below are the required seeding mixes. (Similar mixes may be substituted if approved by the City and total seed used is still 200 lb./acre).

- Dwarf Grass Mix (low height, low maintenance): Dwarf Perennial Ryegrass, 80% by weight; Creeping Red Fescue, 20% by weight; application rate: 100 pounds per acre.

- **Standard Height Grass Mix:** Annual Ryegrass, 40% by weight; Turf-type Fescue, 60% by weight; Application rate: 100 pounds per acre.
5. **If the liquid erosion control blanket fails to form a consistent 3/8" layer, re-application may be necessary.**

## YARD DEBRIS COMPOST

### Purpose

To reduce erosion by providing cover over disturbed bare or reseeded soils. Also can be used to enhance success of seeding/revegetation.

### Conditions Where Practice Applies

1. As a cover on ground surfaces and stockpiles exposed during the wet season (November 1 through April 30).
2. As an alternative to straw mulch to enhance vegetation establishment in areas that have been seeded.

### Design Criteria/Specifications

1. Do not mix seed with compost.
2. If compost is used to enhance hydroseeding applied by September 1, then compost shall be applied at a uniform 1" layer.
3. If compost is applied after November 1, it shall be applied at a uniform 3" layer.
4. Slope Specifications:
 

If the slope is less than 8 percent, apply fine compost.

  - A. If the slope is between 8 and 20 percent, apply medium compost.
  - B. If the slope is greater than 20 percent, apply coarse compost.
  - C. Compost cannot be used on a slope greater than 50 percent.
5. Compost must be free of all foreign materials such as plastic, metal, or other such debris.
6. Compost must be mature and stabilized with moisture content less than 25 percent.
7. A list of yard debris compost processors is available on request from the City.

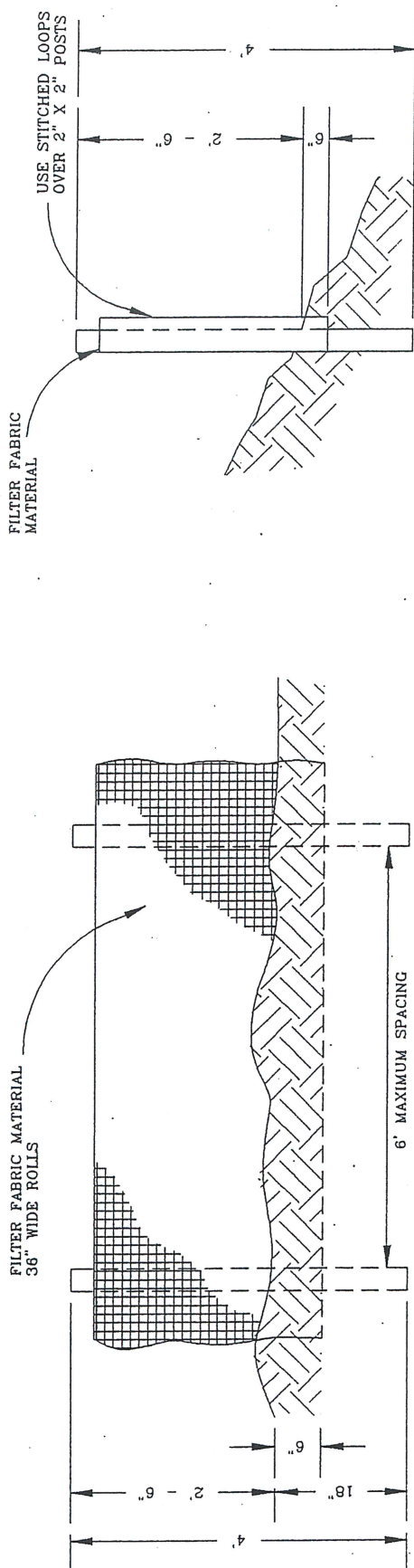
# **EROSION CONTROL MEASURES**

**(Part X)**

**Construction Details**



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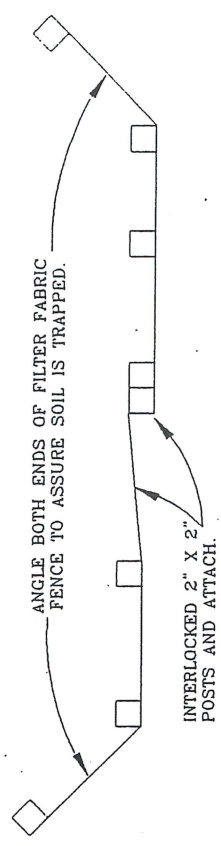


SIDE VIEW

FRONT VIEW

GENERAL NOTES:

1. BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
2. 2" X 2" FIR, PINE OR STEEL FENCE POSTS.
3. STITCHED LOOPS TO BE INSTALLED UPHILL SIDE OF SLOPE.
4. COMPACT ALL AREAS OF FILTER FABRIC TRENCH.
5. NO VARIANCES TO THE ABOVE ARE ALLOWED WITHOUT PRE-AUTHORIZATION FROM THE CITY.



TOP VIEW

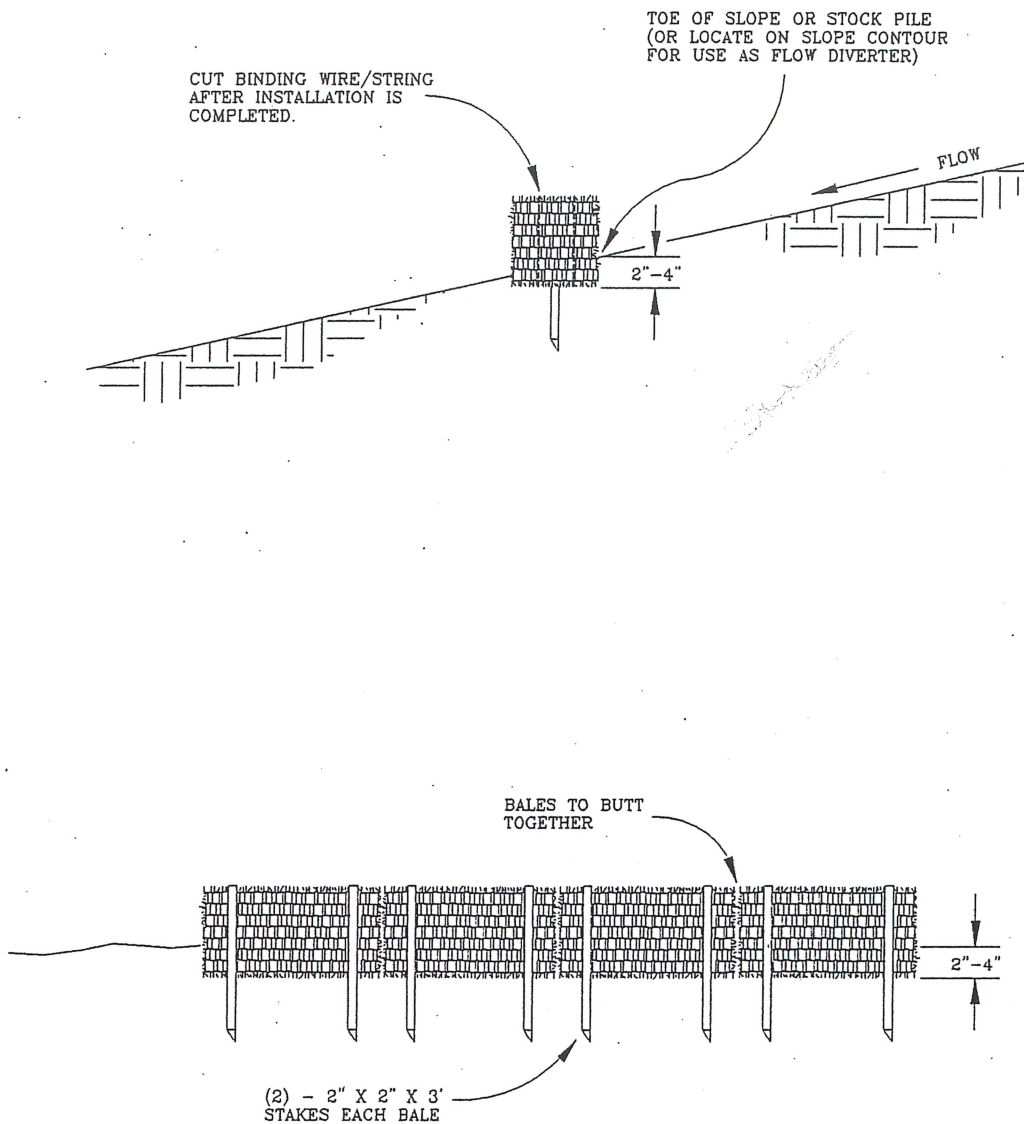
CITY OF TROUTDALE

TEMPORARY  
SEDIMENT FENCE

DATE:  
UPDATED 1997

DRAWING NO.  
X - 1

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GENERAL NOTES

1. EMBED BALES 2" TO 4" DEEP.
2. DRIVE STAKES A MINIMUM 12" INTO THE GROUND.
3. DRIVE STAKES FLUSH TO THE TOP OF BALES.

CITY OF TROUTDALE

*TEMPORARY  
STRAW BALE  
SILT BARRIER*

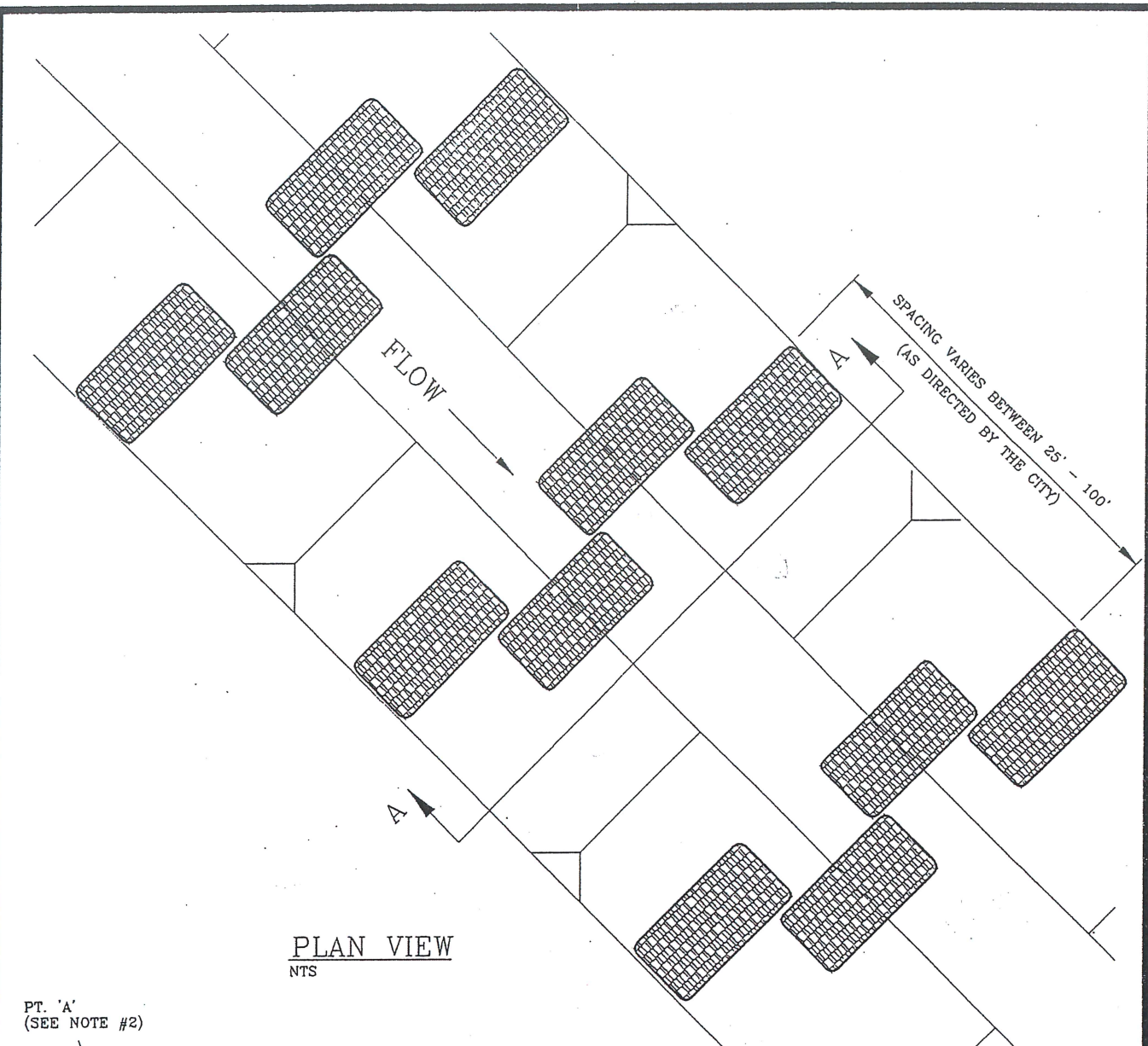
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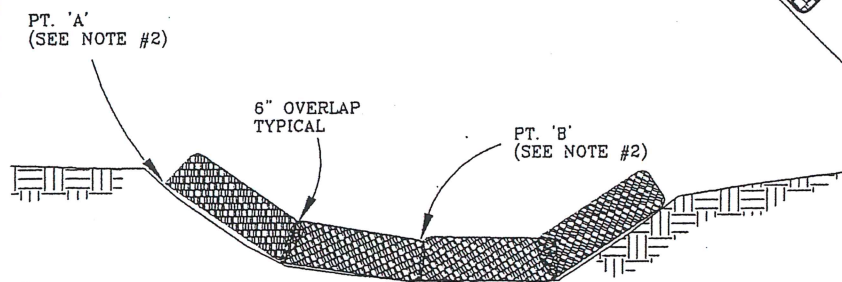
DRAWING NO.

X - 2





PLAN VIEW  
NTS



SECTION A-A  
NTS

GENERAL NOTES

1. STAKING OF BAGS MAY BE REQUIRED USING (2) 1" X 2" WOOD STAKES OR APPROVED EQUAL PER BAG.
2. PT. 'A' MUST BE 6" MINIMUM HIGHER THAN PT. 'B'.

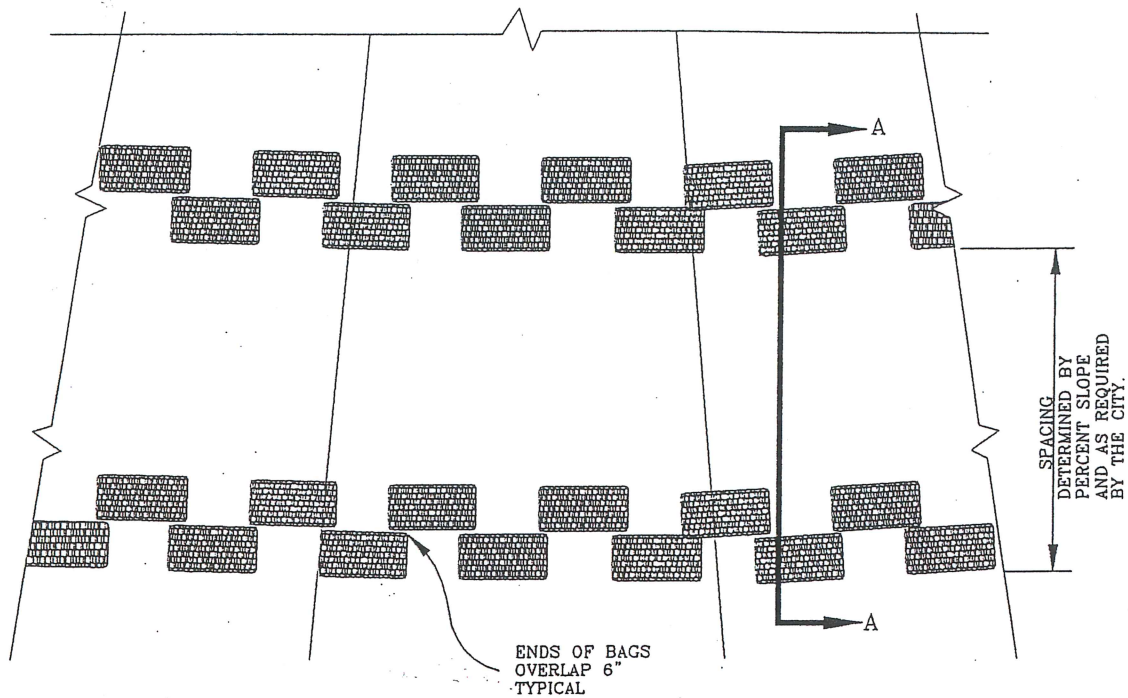
CITY OF TROUTDALE

*BIOFILTER BAGS IN  
DITCHES & SWALES*

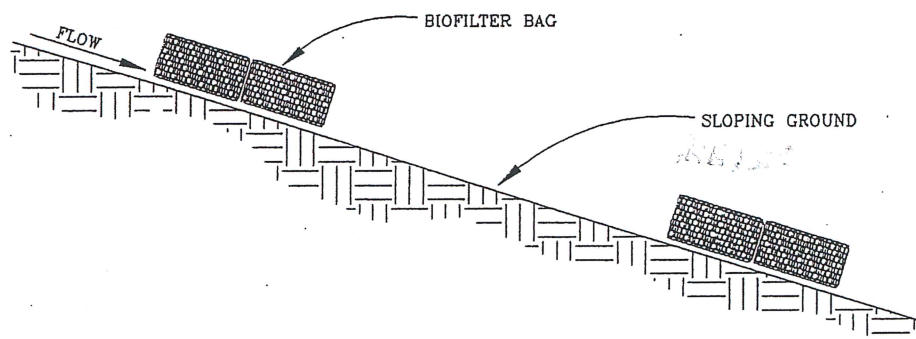
DATE:  
UPDATED 1997

DRAWING NO.  
X - 3

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PLAN VIEW  
NTS



SECTION A-A  
NTS

GENERAL NOTES

1. STAKING OF BAGS MAY BE REQUIRED USING (2) 1" X 2" WOOD STAKES OR APPROVED EQUAL PER BAG.

CITY OF TROUTDALE

*BIOFILTER BAGS  
FOR OVERLAND  
WATER FLOW*  
(OPTION 1)

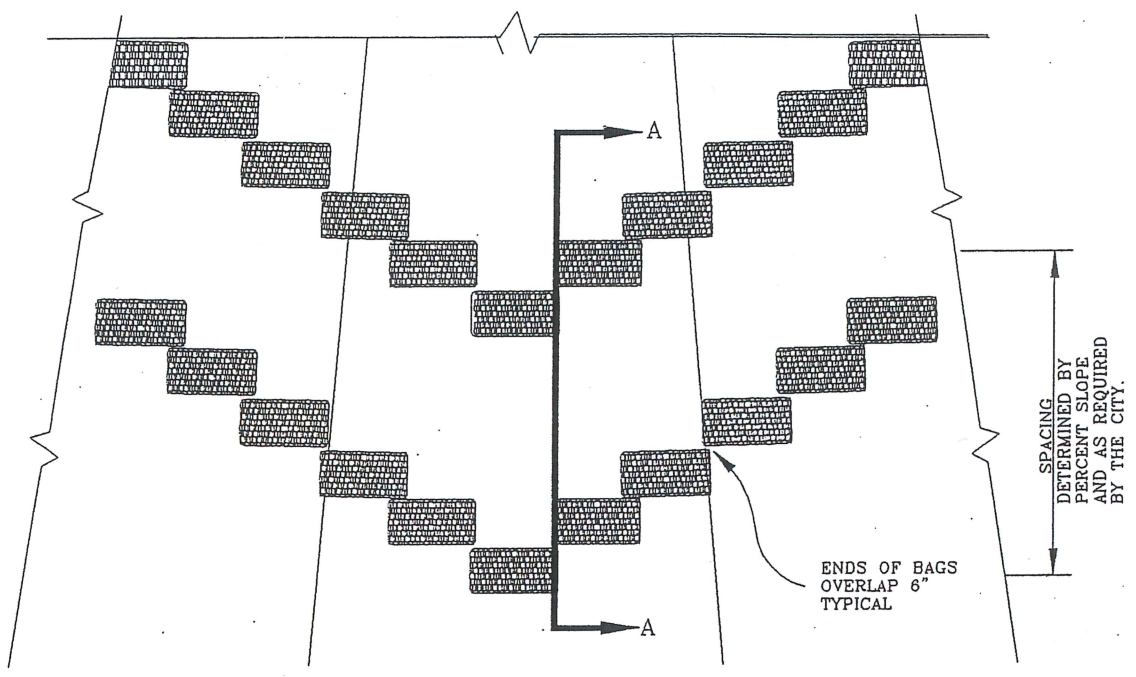
DATE:

UPDATED 1997

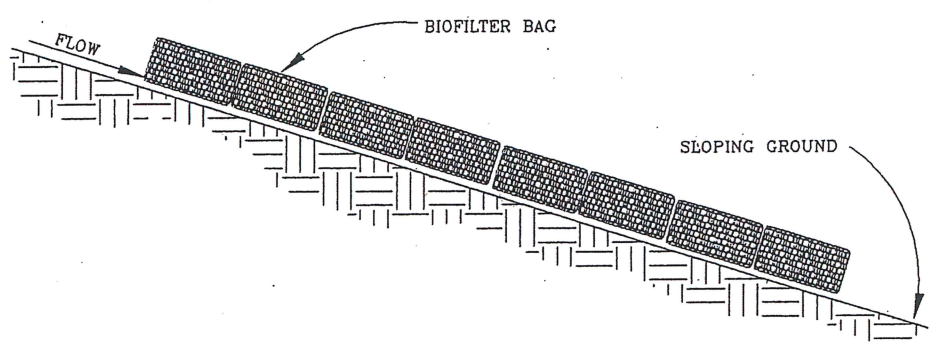
DRAWING NO.

X - 4

5-140



PLAN VIEW  
NTS



SECTION A-A  
NTS

GENERAL NOTES

1. STAKING OF BAGS MAY BE REQUIRED USING (2) 1" X 2" WOOD STAKES OR APPROVED EQUAL PER BAG.

CITY OF TROUTDALE

**BIOFILTER BAGS  
FOR OVERLAND  
WATER FLOW**

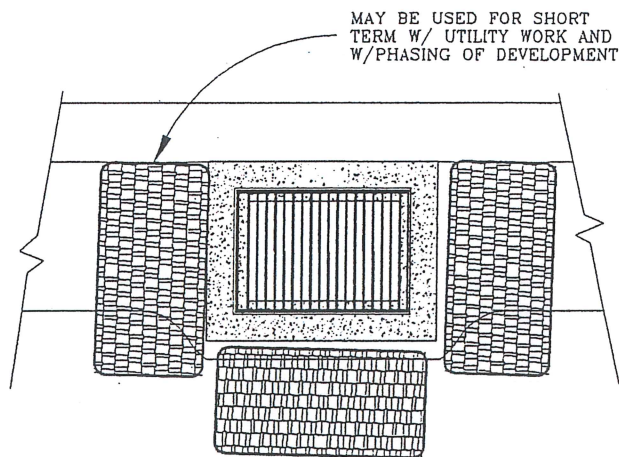
(OPTION 2)

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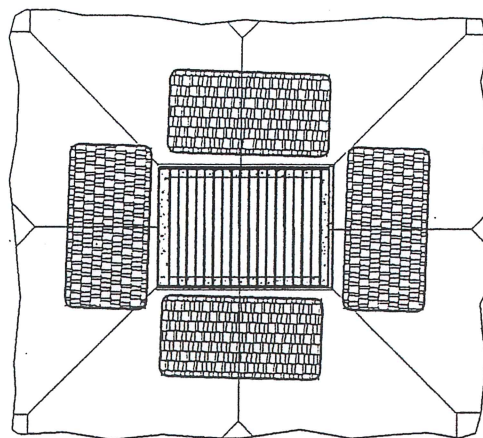
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X - 5



3-141

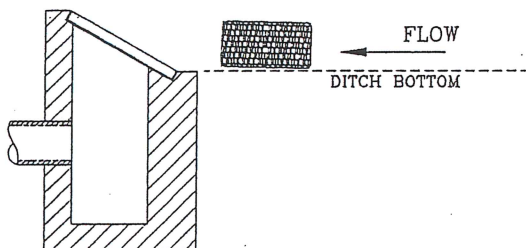


CATCH BASIN

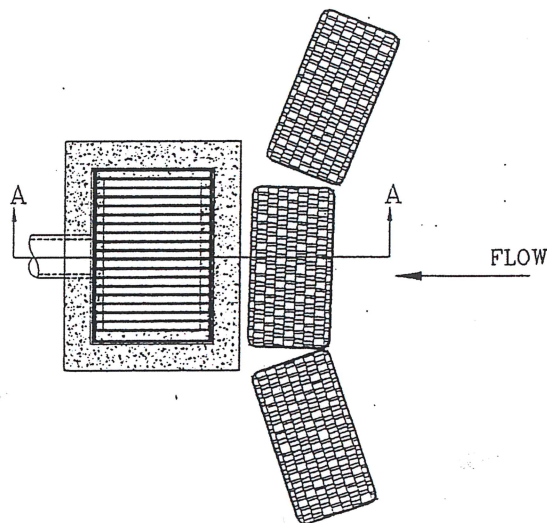


AREA DRAIN

Deleted see IC#11



DITCH INLET  
SECTION A-A



PLAN

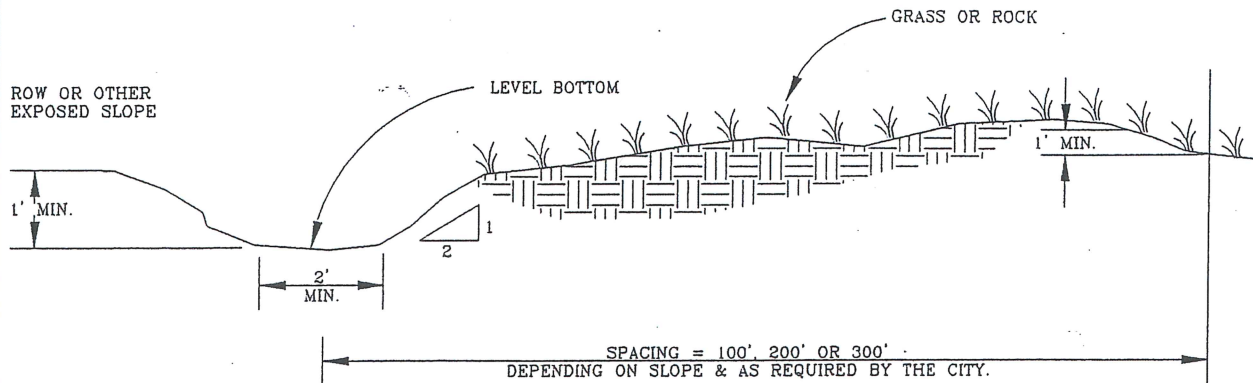
CITY OF TROUTDALE

*BIOFILTER BAG-  
PROTECTED  
CATCH BASINS  
DETAIL*

DATE:  
UPDATED 1997

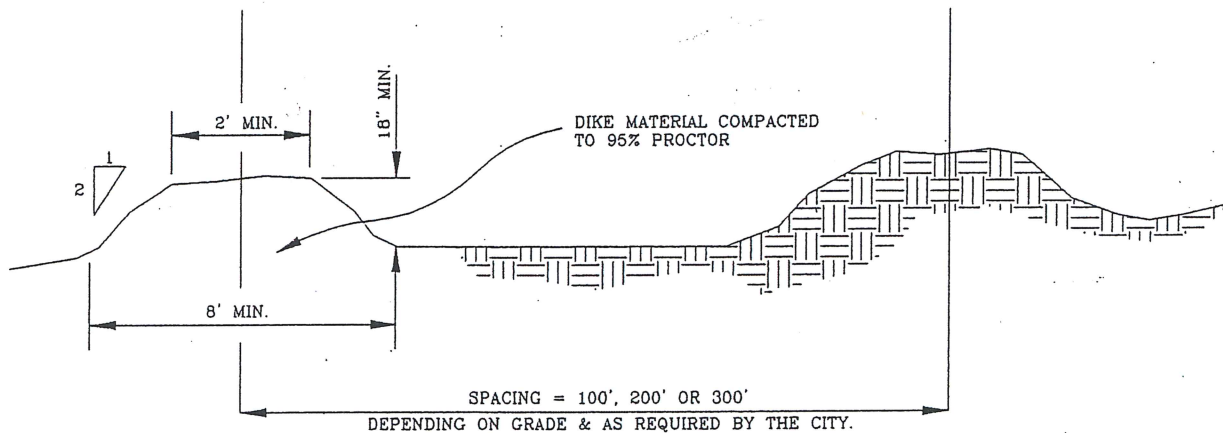
DRAWING NO.  
X - 6

5-142



BOTTOM WIDTH	2' MINIMUM, THE BOTTOM WIDTH SHALL BE LEVEL
DEPTH	1' MINIMUM
SIDE SLOPE	2H:1V OR FLATTER
GRADE	MAXIMUM 5%, WITH POSITIVE DRAINAGE TO A SUITABLE OUTLET (SUCH AS SEDIMENTATION POND)

### TEMPORARY INTERCEPTOR SWALE



### TEMPORARY INTERCEPTOR DIKE

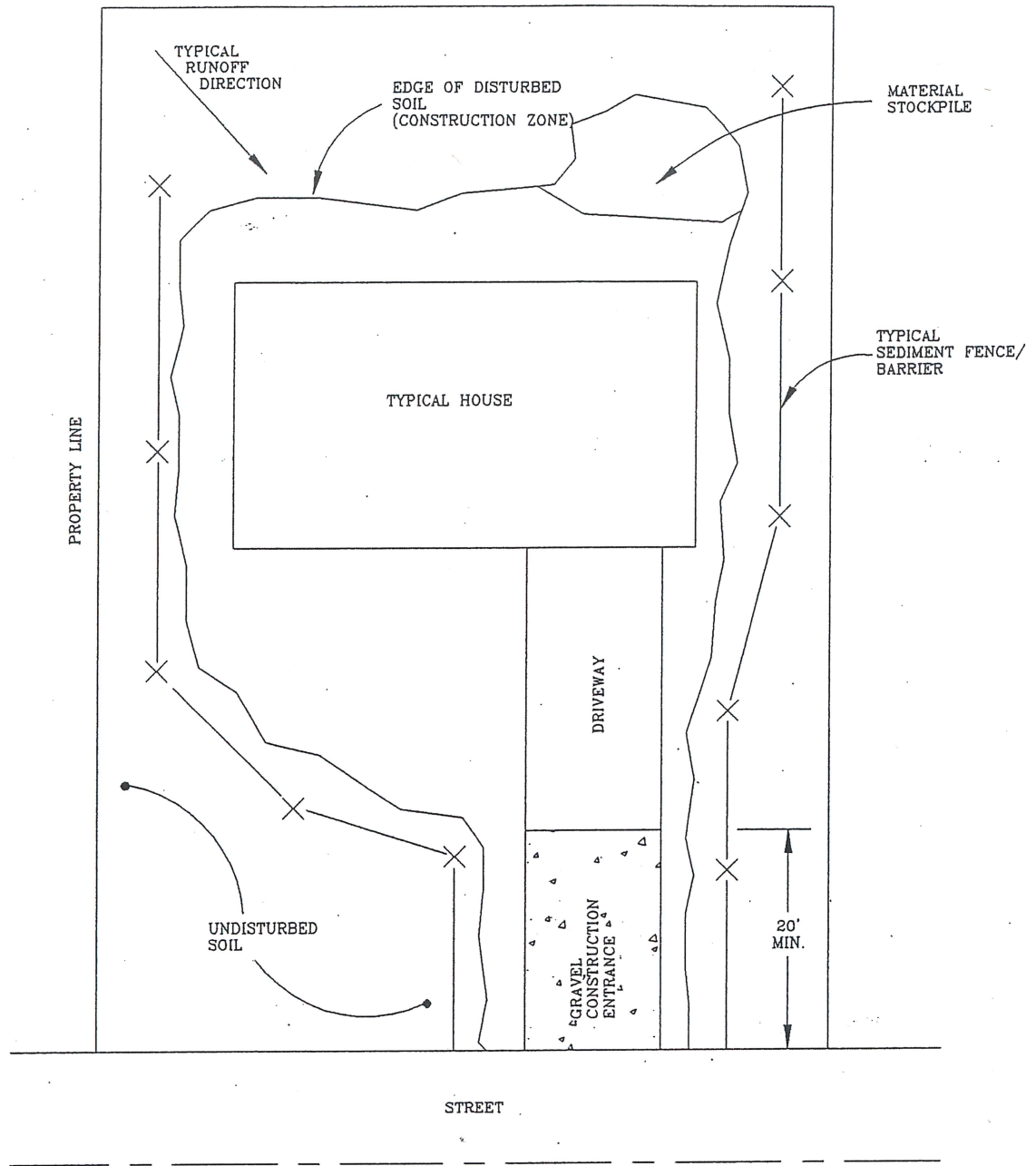
CITY OF TROUTDALE

## TEMPORARY SITE INTERCEPTOR (SWALES & DIKES)

DATE:  
UPDATED 1997

DRAWING NO.  
X - 7

5-143



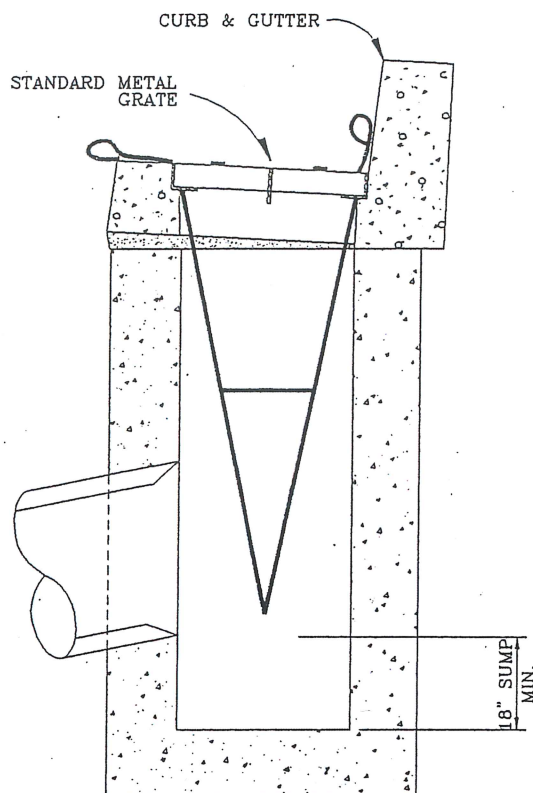
CITY OF TROUTDALE

*EROSION CONTROL  
FOR SINGLE LOTS*

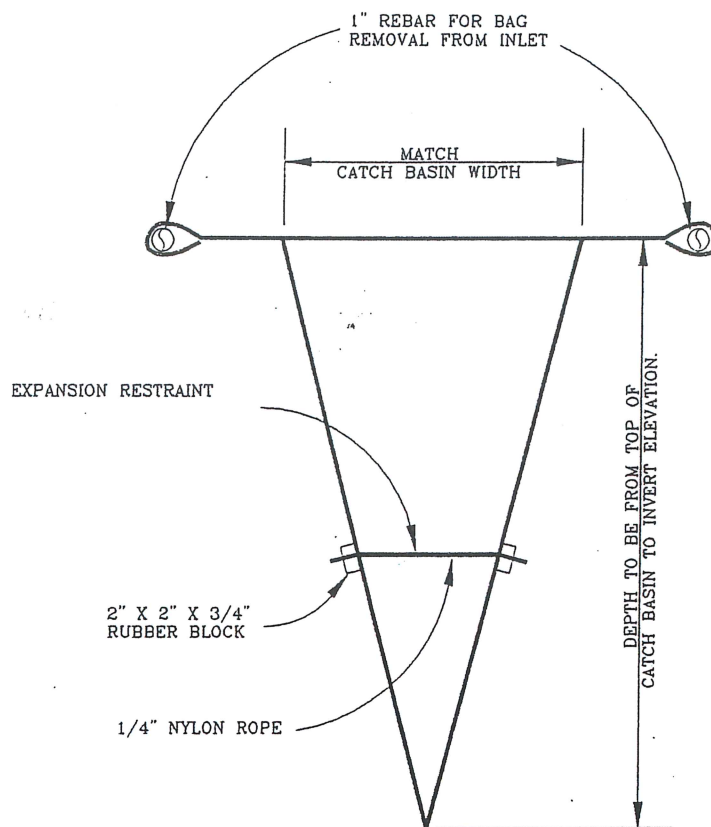
DATE:  
UPDATED 1997

DRAWING NO.  
X - 8

5-744



INSTALLATION DETAIL



SILT SACK DETAIL

GENERAL NOTES:

1. EMPTY SILT SACK AS NECESSARY.

CITY OF TROUTDALE

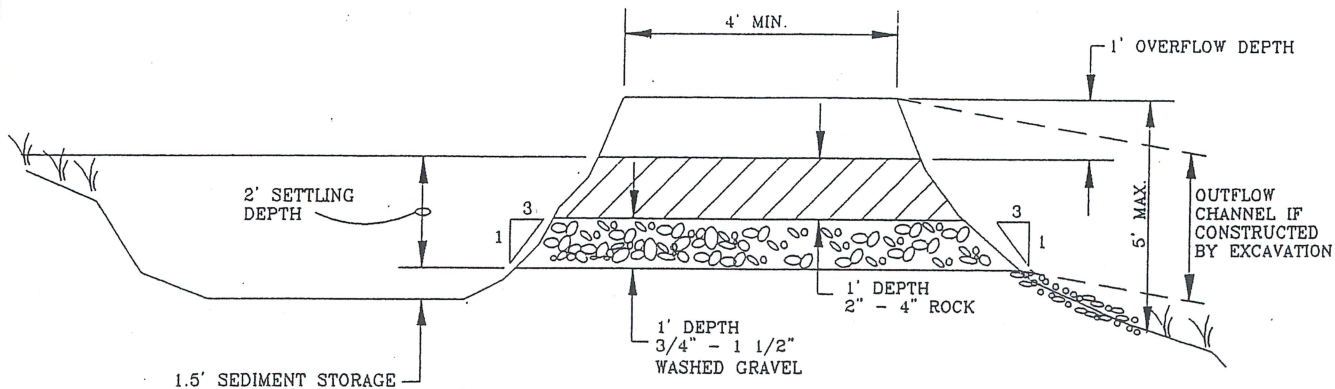
FILTER BAG INLET  
DETAIL

DATE:  
UPDATED 1997

DRAWING NO.  
X - 9

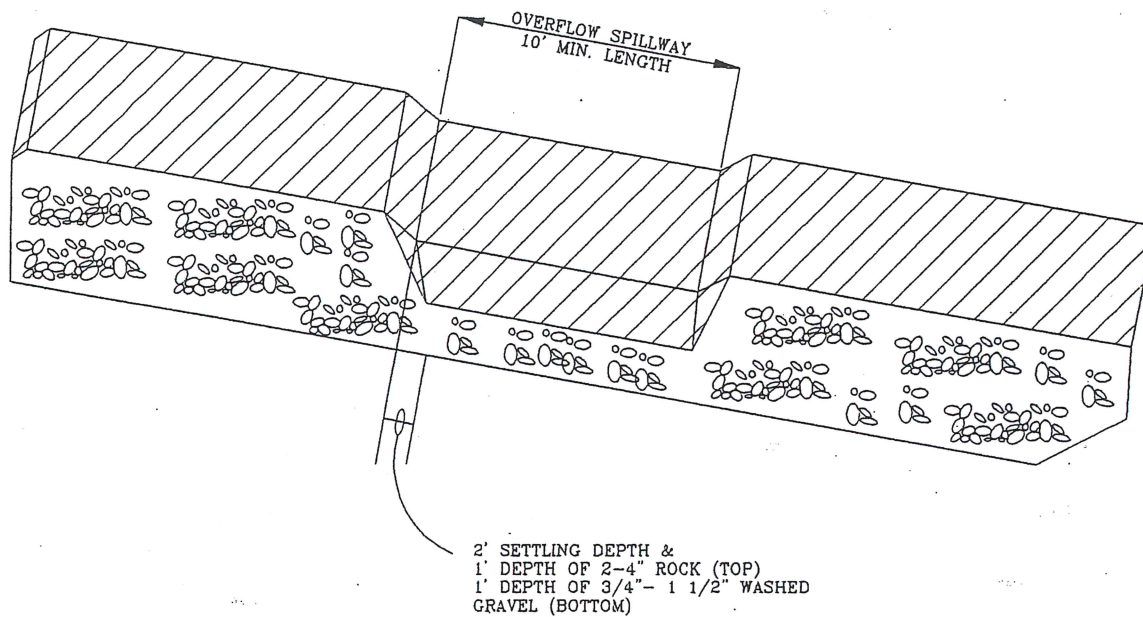


5-195



### CROSS SECTION

NTS



### SEDIMENT TRAP OUTLET

NTS

#### GENERAL NOTES

1. SEDIMENT TRAP MAY BE CONSTRUCTED BY EXCAVATION OR BY BUILDING A BERM.
2. A FILTER FABRIC FENCE OR SIMILAR FILTER MUST BE CONSTRUCTED TO FILTER RUNOFF FROM THE SEDIMENT TRAP PRIOR TO DISCHARGE FROM THE CONSTRUCTION SITE.

CITY OF TROUTDALE

*SEDIMENT  
TRAP*

DATE:

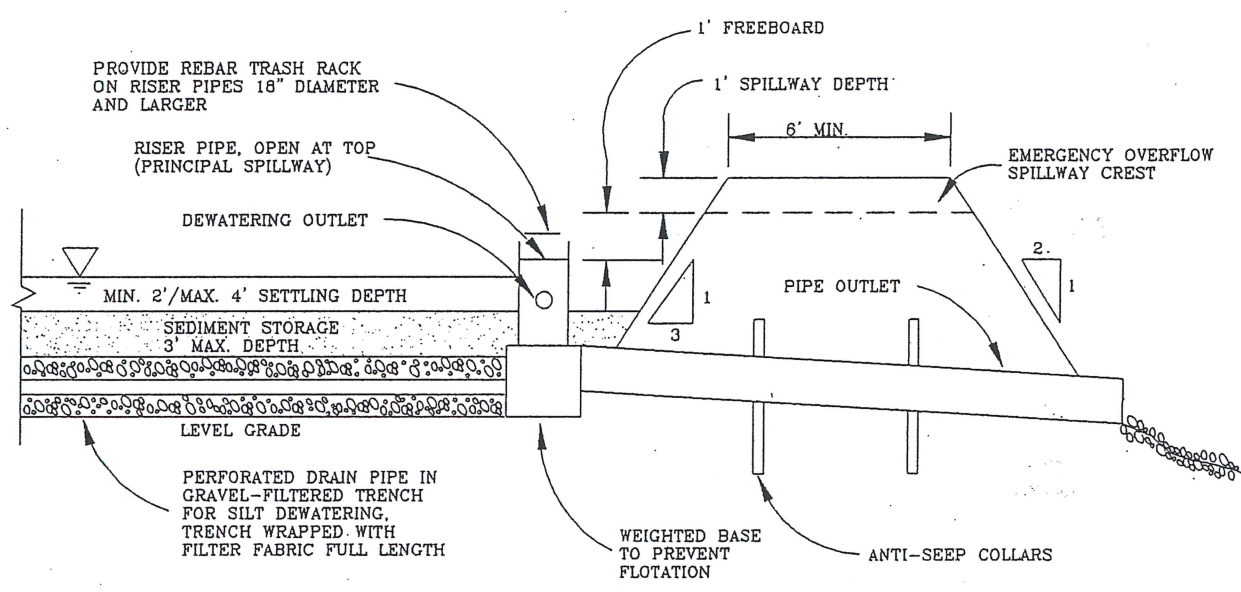
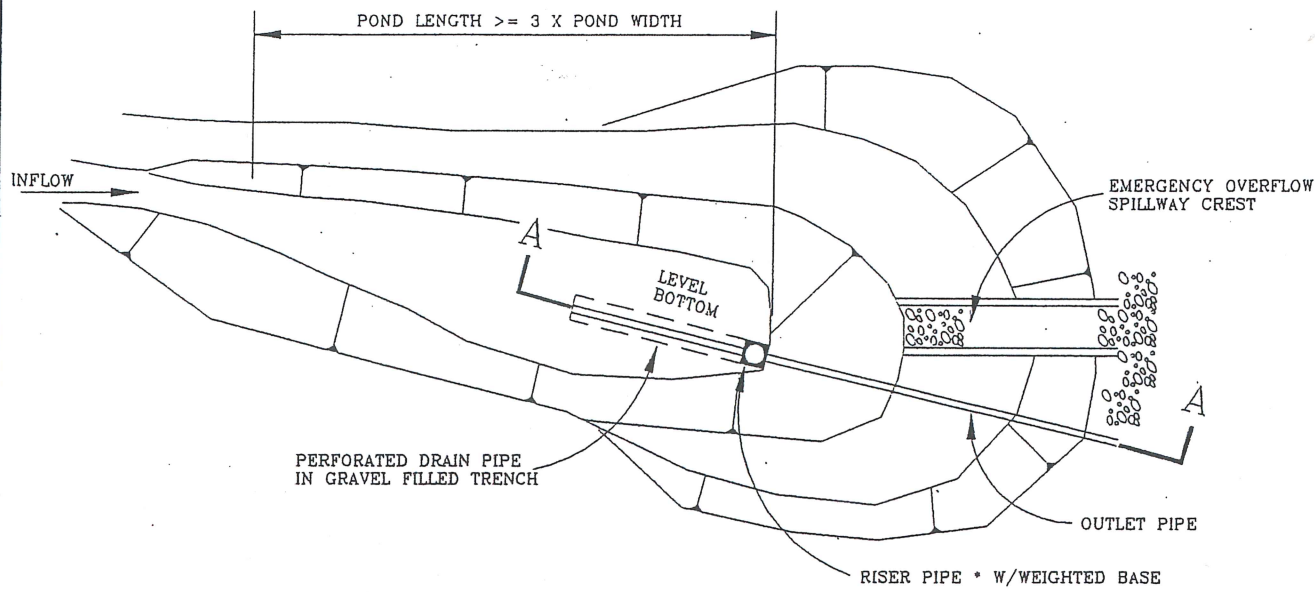
UPDATED 1997

DRAWING NO.

X - 10



5-146



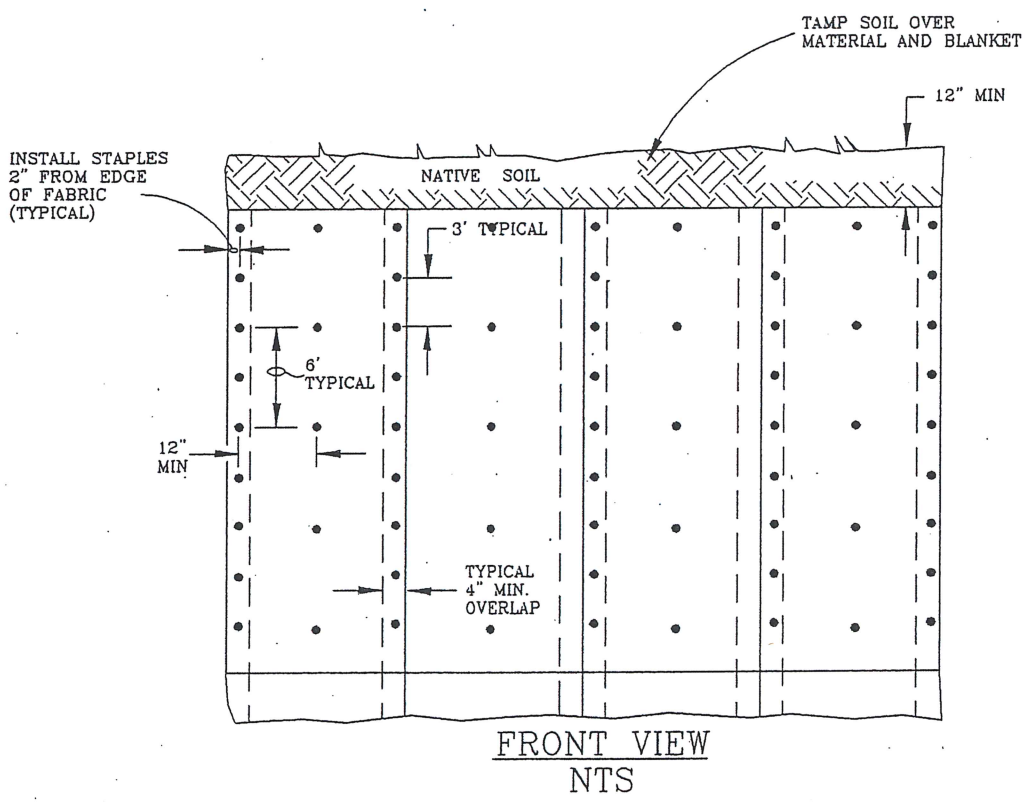
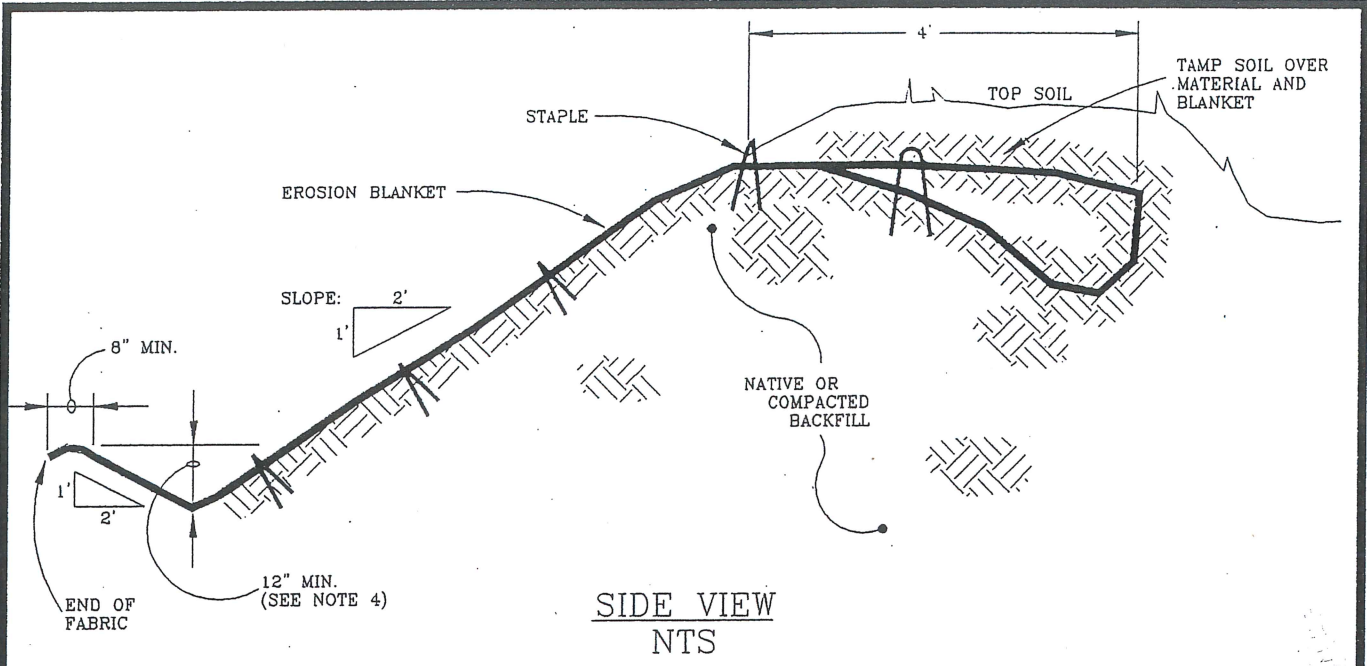
# SECTION A-A

## GENERAL NOTES

1. SEDIMENT DEWATERING MAY BE ACCOMPLISHED WITH PERFORATED DRAIN PIPE IN TRENCH AS SHOWN OR WITH A PERFORATED RISER COVERED WITH FILTER FABRIC AND GRAVEL "CONE".
2. A FILTER FABRIC FENCE OR SIMILAR FILTER MUST BE CONSTRUCTED TO FILTER RUNOFF FROM THE POND PRIOR TO DISCHARGE FROM THE CONSTRUCTION SITE.

CITY OF TROUTDALE	
SEDIMENT POND	
DATE: UPDATED 1997	DRAWING NO. X - 11

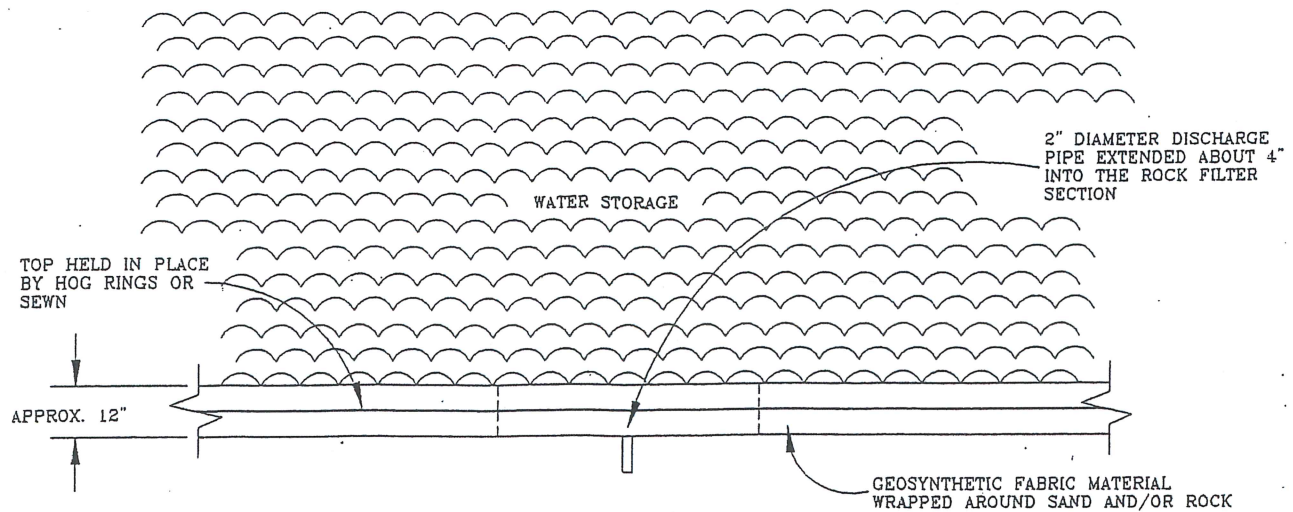
5-147



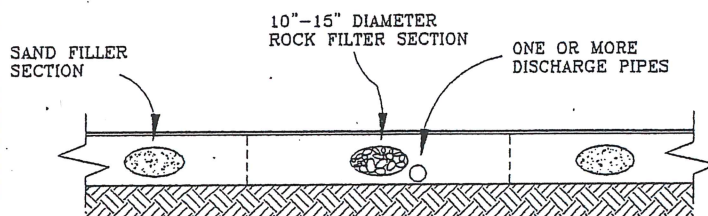
GENERAL NOTES:

1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/BLANKETS SHALL HAVE GOOD SOIL CONTACT.
2. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
3. BLANKETS MUST BE STAPLED USING STAPLES A MINIMUM OF 6" IN LENGTH AND SPACED AS SPECIFIED IN THE FRONT VIEW. 12" LONG STAPLES MAY BE REQUIRED DEPENDING ON SOIL CONDITIONS.
4. THIS 12" DEPTH IS A MINIMUM REQUIREMENT. DEPTH MAY BE INCREASED AS DEEMED NECESSARY BY CITY FORCES ON A PER PROJECT BASIS.

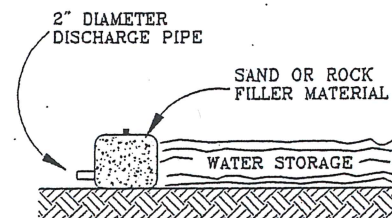
CITY OF TROUTDALE	
<b>EROSION BLANKET INSTALLATION DETAIL</b>	
DATE: UPDATED 1997	DRAWING NO. X - 12



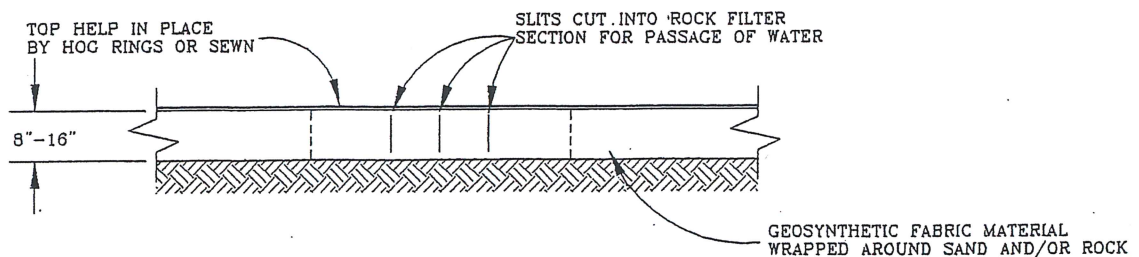
TOP VIEW



FRONT VIEW



SIDE VIEW



BACK VIEW

## GENERAL NOTES

1. IF THE CONTINUOUS BERM IS USED AS AN ALTERNATIVE TO A SEDIMENT FENCE THEN IT MUST BE FILLED WITH MATERIAL WHICH ALLOWS WATER TO PASS THROUGH SUCH AS PEA GRAVEL OR 3/4" - 1" ROCK.
2. IF THE CONTINUOUS BERM IS USED AS AN ALTERNATIVE TO A SEDIMENT TRAP THE MAJORITY OF THE BERM MUST BE FILLED WITH NATIVE SOIL OR SAND. THE LOW POINT AREA MUST BE FILLED WITH MATERIAL WHICH ALLOWS WATER TO PASS THROUGH SUCH AS PEA GRAVEL OR 3/4" - 1" ROCK. A MINIMUM 3' WIDE ROCK FILTER SECTION MUST BE LOCATED AT THE LOW POINT TO WHICH WATER WILL FLOW THROUGH.
3. WHEN INSTALLING THE CONTINUOUS BERM EACH END MUST BE ANGLED INWARD TO PREVENT SEDIMENT AND WATER FROM FLOWING AROUND THE BERM.

CITY OF TROUTDALE

## CONTINUOUS GEOSYNTHETIC BERMS

DATE:

UPDATED 1997

DRAWING NO.

X - 13